Security Sensors For Re-locatable Jersey Barriers

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Security Sensors for Jersey Barriers - Presentation

Overview

- Who we are
- Jersey Barriers
  - What is the application and history?
- Requirements for Sensors
- Intelli-FIELD™
  - What are its principles and features in this application?
- S-Line™
  - What are its principles and features in this application?
- Sensor Testing
- Conclusions

Senstar-Stellar Corporation

Company History

- Merger of Senstar Corporation and Stellar Security Products, Inc. in 1997
- Stellar founded in 1973
  - fence detection, electrostatic field, buried cable sensors
  - integrated alarm monitoring and encryption systems
- Senstar founded in 1981
  - buried cable, video motion, rapid deployment sensors
  - integrated alarm monitoring systems
- Unmatched experience in outdoor intrusion detection technologies
  - broadest range of outdoor products in security industry
  - virtually every technology in outdoor security
- Worldwide factory support for applications, installation & service
- Member of the Magal Group of Outdoor Security Companies

Background & Experience

Specialists in outdoor intrusion detection systems

- Over 40% of the annual world market in outdoor security
- Designers and manufacturers of unique sensors
- Extensive experience in sensor application and development
- Installations in over 75 countries
- Several thousand perimeter sites
- Tropical, polar and desert conditions
- Worldwide network of dealers and installers
- ISO 9002 Registration

Technical Services

Service and Support

Worldwide technical support, including:

- application design assistance and site surveys
- systems engineering - hardware and software customized and standard products
- project management
- installation support
- commissioning
- training - application, installation, operation & maintenance
- documentation - drawings and manuals

After-sales technical support from factory and on-site

Factory warranty and repair service

Outdoor sensor testing services for special requirements

Facilities

- Headquarters are located in Fremont, CA
  - US sales and service
  - New product engineering
- Manufacturing, engineering, service, and international sales located in Carp (Ottawa), Ontario
  - 27,000 sq. ft. office & manufacturing complex
  - 10,000 sq. ft. sensor cable manufacturing facility
  - 10 acre outdoor sensor test site
- Sales offices in:
  - Temperance, MI
  - Tucson, AZ
  - Niceville, FL

Some of our Clients

- Most Western and mid-Eastern Heads of State
- NATO Military Forces
- 70% of the Nuclear Power Plants in the USA
- Other Nuclear Power Plants worldwide
- ALL Federal Prisons in Canada
- Numerous Correctional Facilities worldwide
- Power Utilities
- VIP Estates and Residences
- Communication Centers
- Borders and Airports
- Industrial and Commercial Sites

What are Jersey Barriers

- Concrete barriers used extensively for traffic control
- Easily deployed with custom moving equipment
- More recently used for access control since formidable mass can deter vehicle access by other than authorized route.
- Barriers need to be integrated with access control systems, video systems for embassies, military bases etc.
- Like perimeter fences, having security detection at the perimeter provides assessment of intrusion and provides intruder delay time for response forces to arrive.

Concrete Jersey Barriers

Unloading of concrete barriers at test site

Installation of Barriers

Specialized Vehicle for Unloading and Positioning Barriers

Barrier Alignment

Positioning Barriers for Proper Alignment

Interlocking Barriers

Interlocking of Barriers at interim Points

Concrete Jersey Barriers at S.I.T.E.

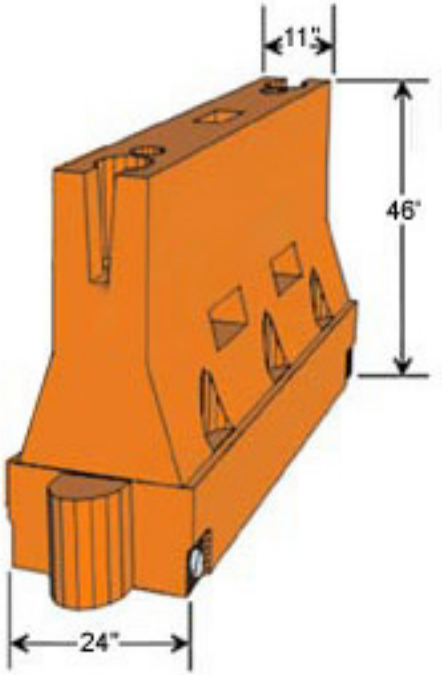
Sensor. Integrated. Test. Environment.

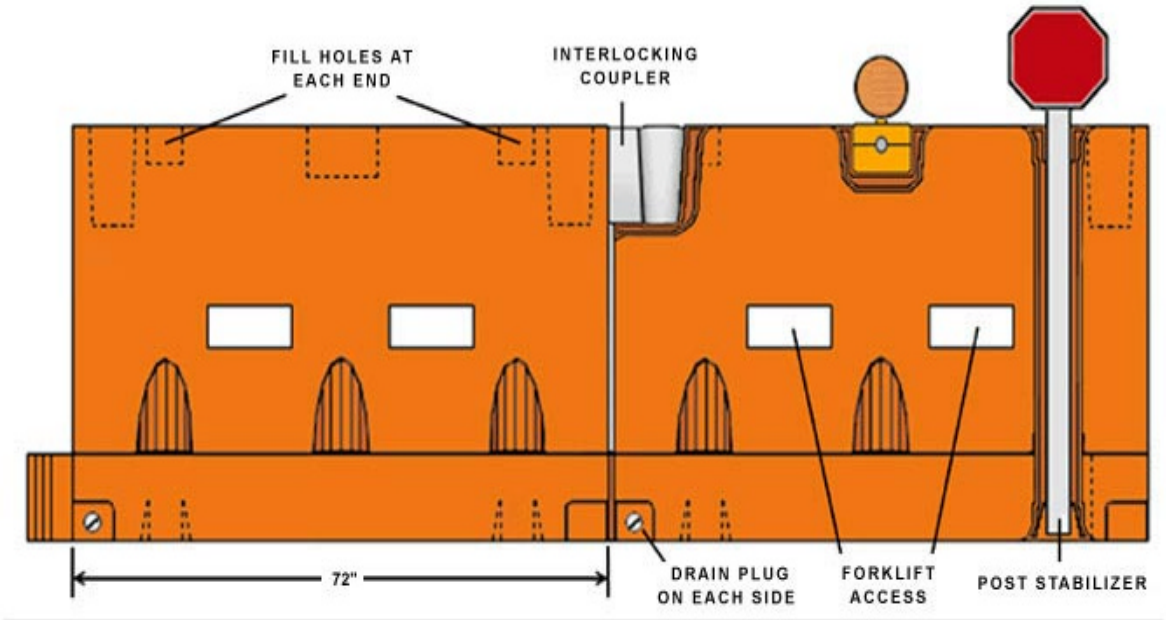
Plastic Jersey Barrier Systems

- **Plastic barriers are more easily transportable, as light weight**
- **Can be filled with water or sand**
- **Various manufacturers and designs; barriers and sensors on GSA schedule.**
- **Can be custom molded for attachments**
- **Sensors (S-Line) can be conformally mounted directly on the barriers if not completely filled.**

Plastic Jersey Barrier System

- **YODOCK Barrier system (plastic)**





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Plastic Jersey Barriers at S.I.T.E.

An Alternate Style of Plastic Barrier from Other Manufacturer

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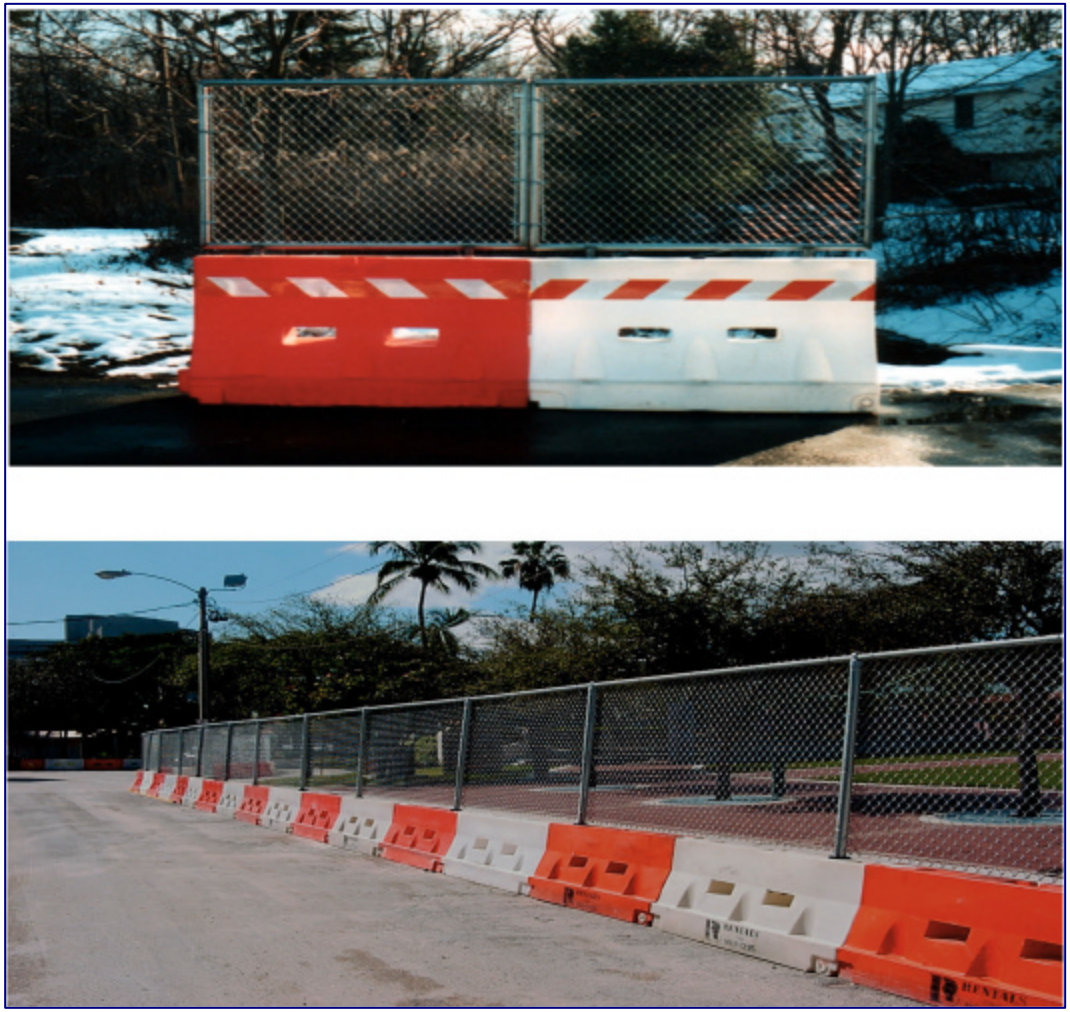
Plastic Jersey Barriers - Conformable

Plastic Barriers Provide Easy Means of Directional Changes in the Perimeter

Fence with Plastic Jersey Barrier



Airport jersey barrier usage

Intelli-FIELD Application

- **Intelli-FIELD is a terrain-following, volumetric sensor that creates an electrostatic field between parallel field and sense wires**
- **Standard IntelliFIELD system can be applied to a portable, re-locatable barrier**
- **Can be 2 or more longitudinal wires, number and spacing dependent on height of detection field sought**
- **System resistant to nuisance alarms, e.g. birds**
- **Provide grounding for electrostatic field**

History of Electrostatic Field Disturbance Sensors

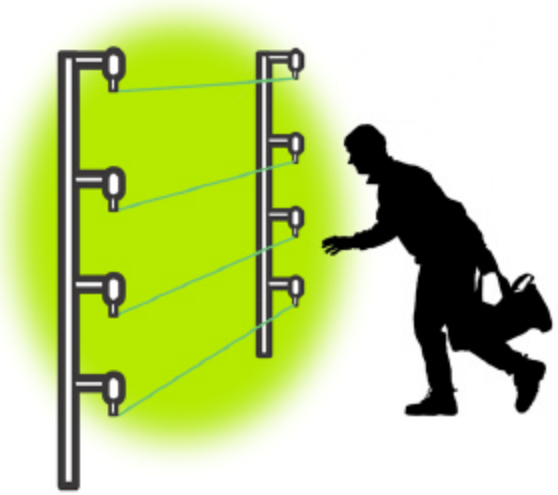
- Electrostatic Field Disturbance Sensors (E-Field) first developed in early 1970s by Stellar Systems in response to nuclear security needs
  - E-Field met needs including tight perimeter clear zones

- Enhanced in the mid 1980's with improved series 800 processors and series 5000 hardware
  - Lower FAR/NAR and reduced maintenance

- 1999 to 2001 developed Intelli-FIELD ™
  - Digital electrostatic field sensor

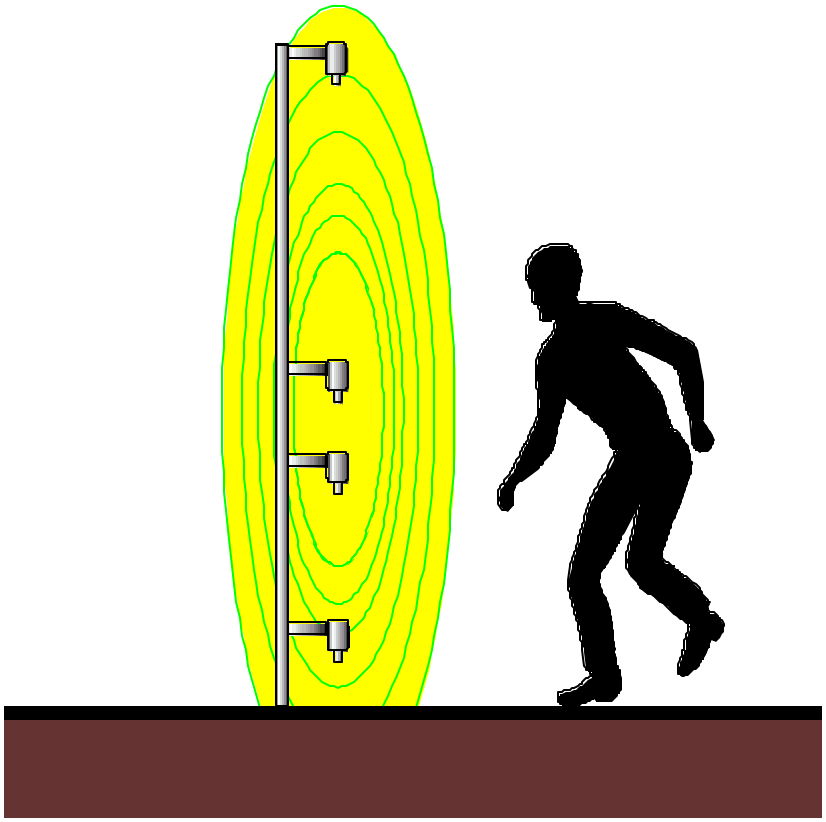
- Design philosophy provides next generation performance while allowing easy upgrades of early generation E-Field installations

Electrostatic Field Sensor Basics



- **Parallel Sense & Field wires**
- **Field Generator excites Field wire(s)**
- **Electrostatic field coupled into Sense wires**
- **Moving objects in the field changes the coupling between Field and Sense wires**
- **Processor detects a compound signal consisting of:**
  - Amplitude Change (Mass of intruder)
  - Rate of Change (Movement of intruder)
  - Time Disturbance (Time intruder in pattern)
- **All Conditions are required to generate an alarm**

Intelli-FIELD - Basics



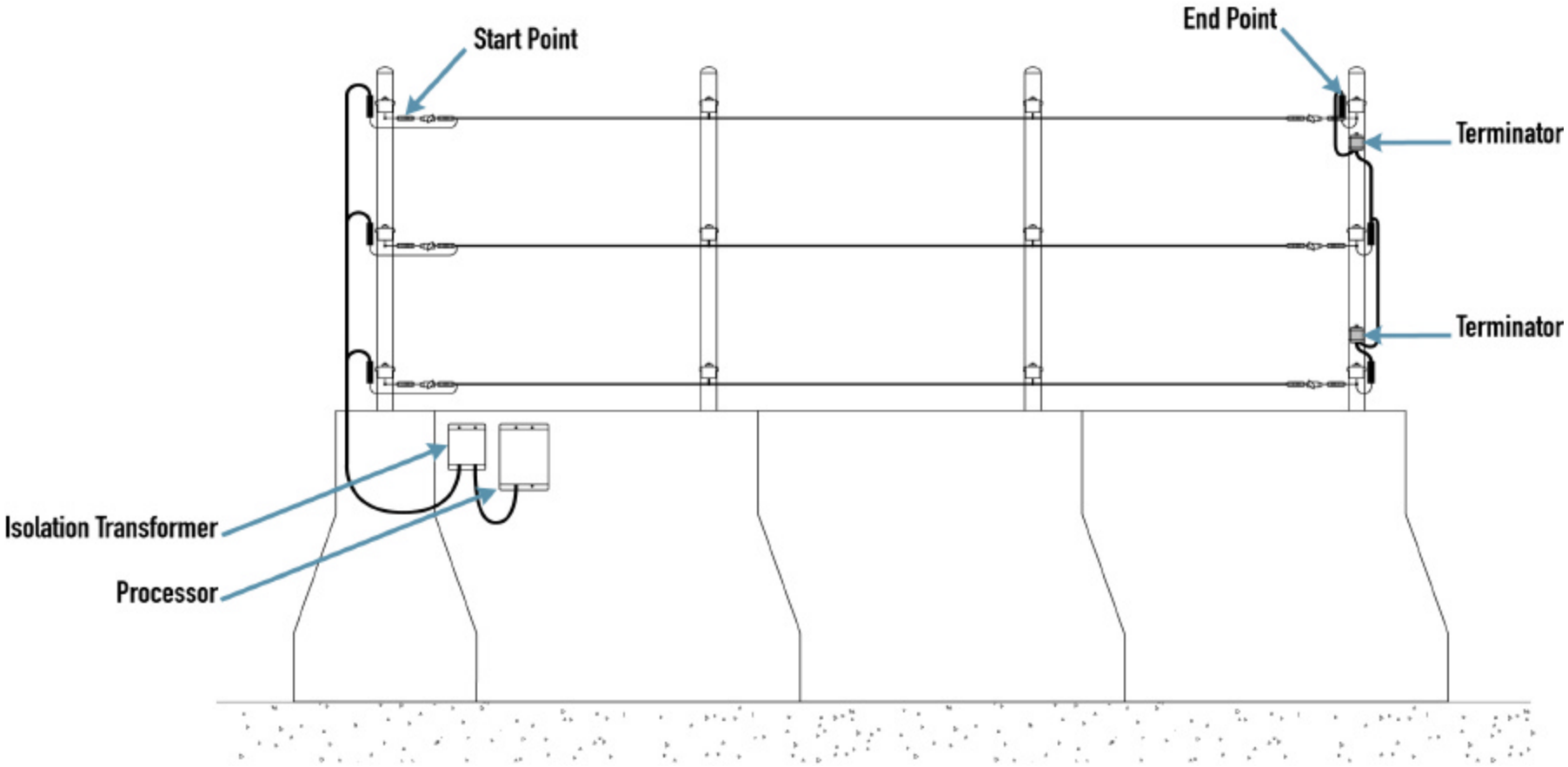
- A 2-wire, 3-wire or 4-wire system that creates an electric field between field and sense wires
- High, narrow field pattern
  - up to 3 m (10 ft.) high and 1 m (3.3 ft.) wide
- Multiple systems can increase field height
- Detects intruders that pass through and disturb the field

Intelli-FIELD - Features

- Volumetric, terrain-following field disturbance sensor
- 500 ft (150 m) zones
- Dual zone processor
- High-reliability design for high risk applications
- Enhanced digital signal processing techniques
- Adjustable bandpass, modifies detection characteristics to suit specific installation requirements
- Field generator supervision and optimization
- Well defined coverage, adjustable detection pattern

Intelli-FIELD System Block Diagram

- **Jersey Barrier Configuration Overview**



Intelli-FIELD installed on Jersey Barrier

Typical Installation on Concrete Jersy Barriers at S.I.T.E.

Intelli-FIELD at S.I.T.E.

Intrusion Attempt Near Barrier

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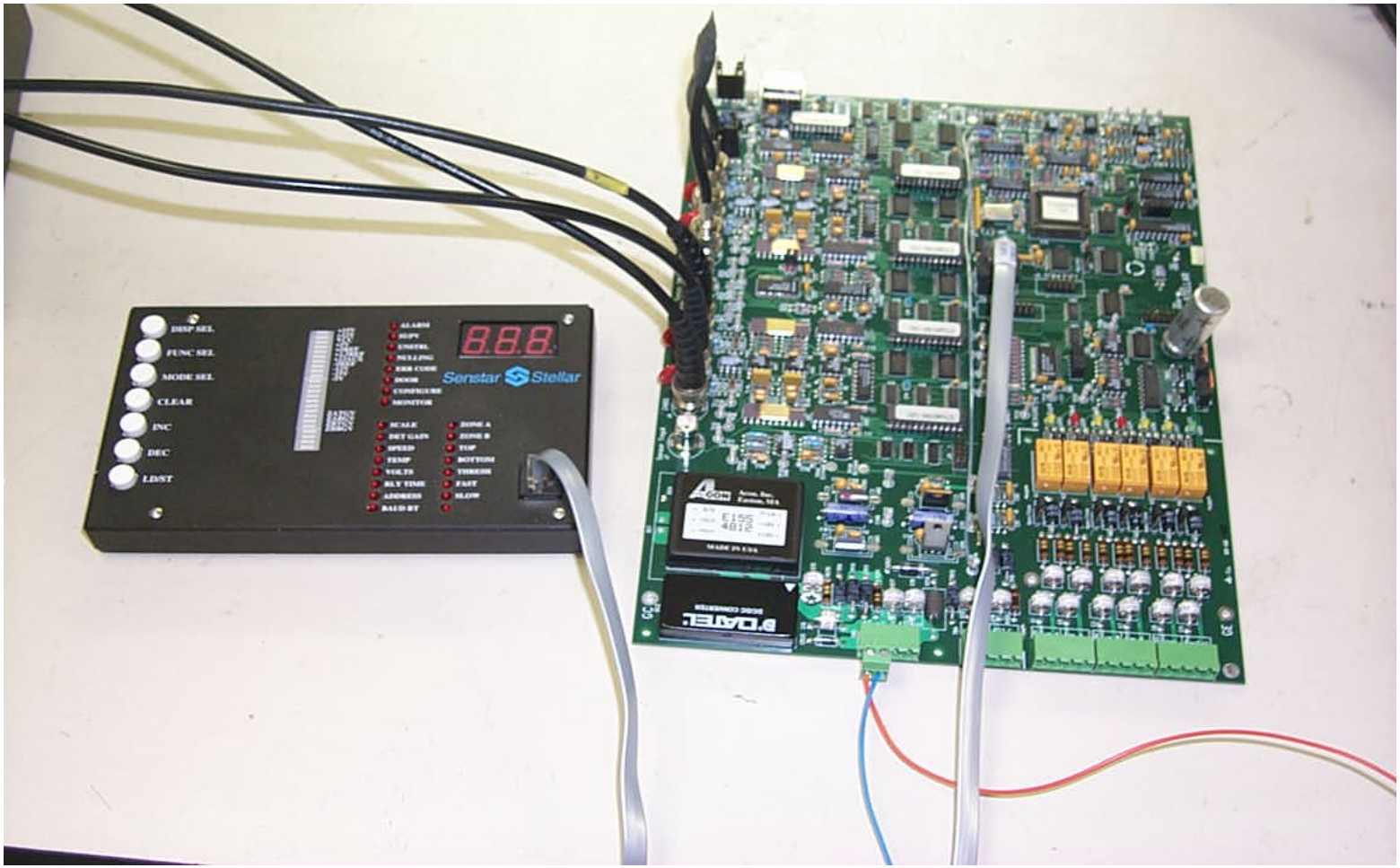
Intelli-FIELD

Typical Installation on Concrete Barriers

Intelli-FIELD Configuration Module and Board



Configuration Module Provides Convenient Means of Adjustment

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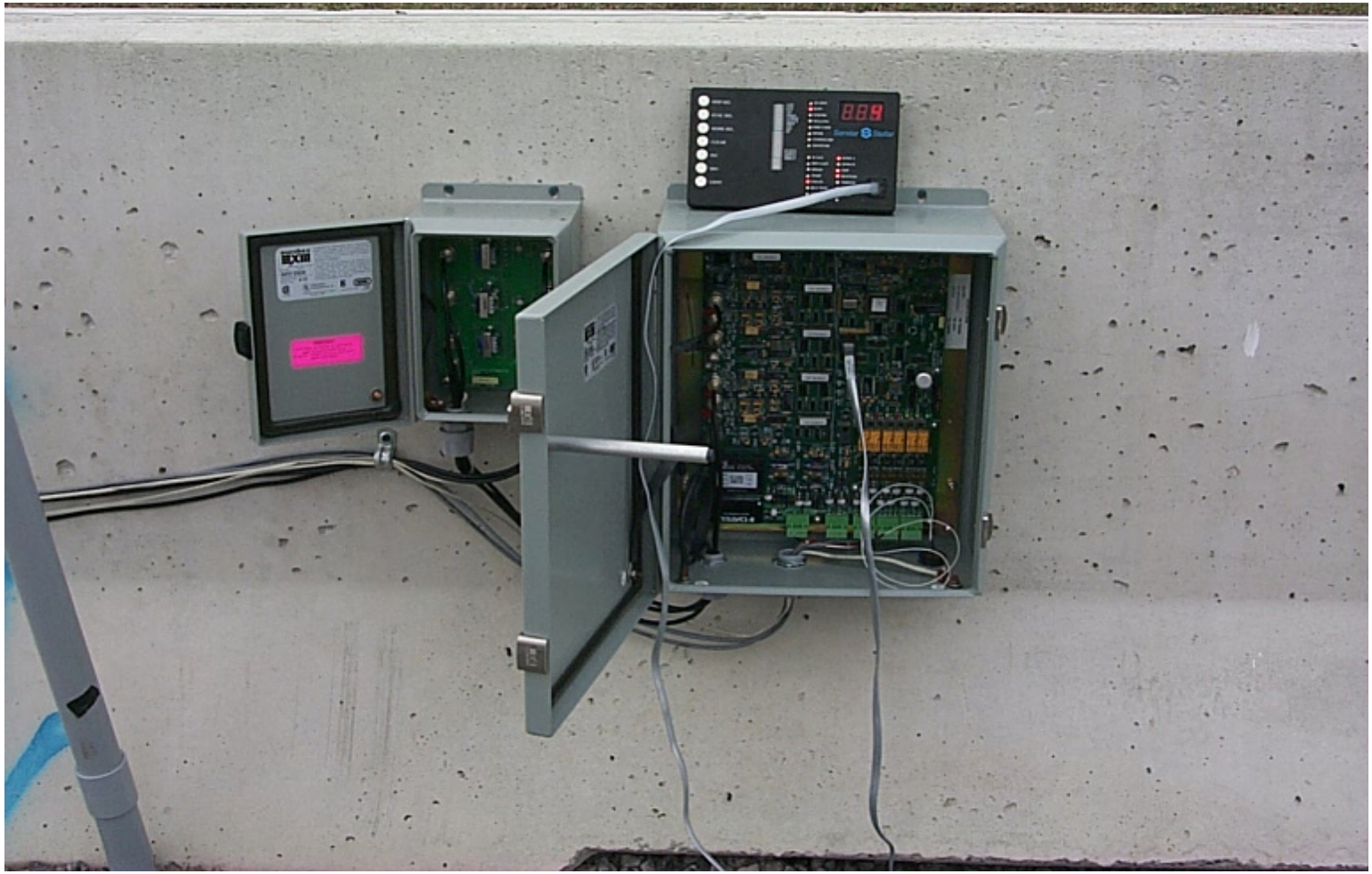
Intelli-FIELD processor on Jersey Barrier



Set Up in Field with Configuration Module

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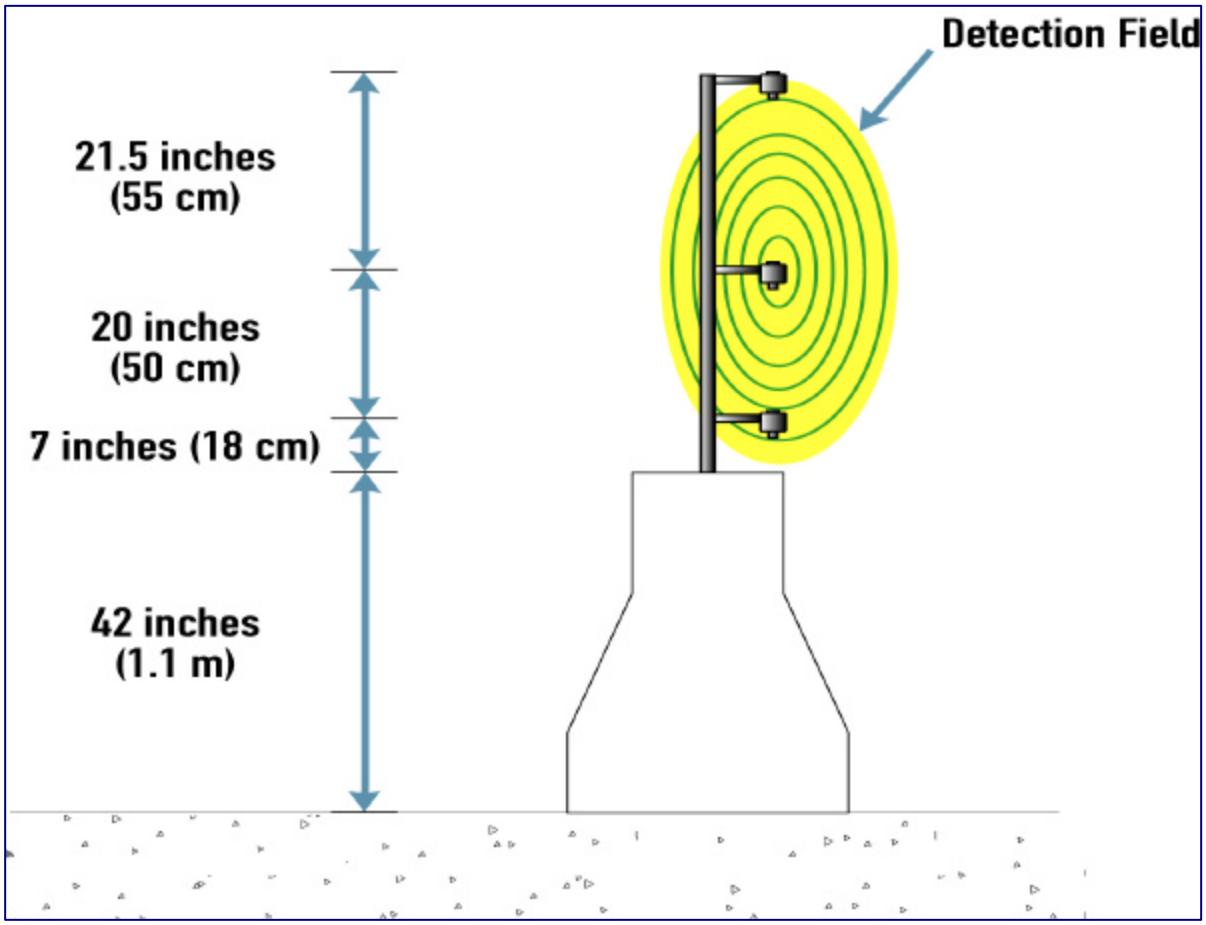
Intelli-FIELD Detection Field and Containment



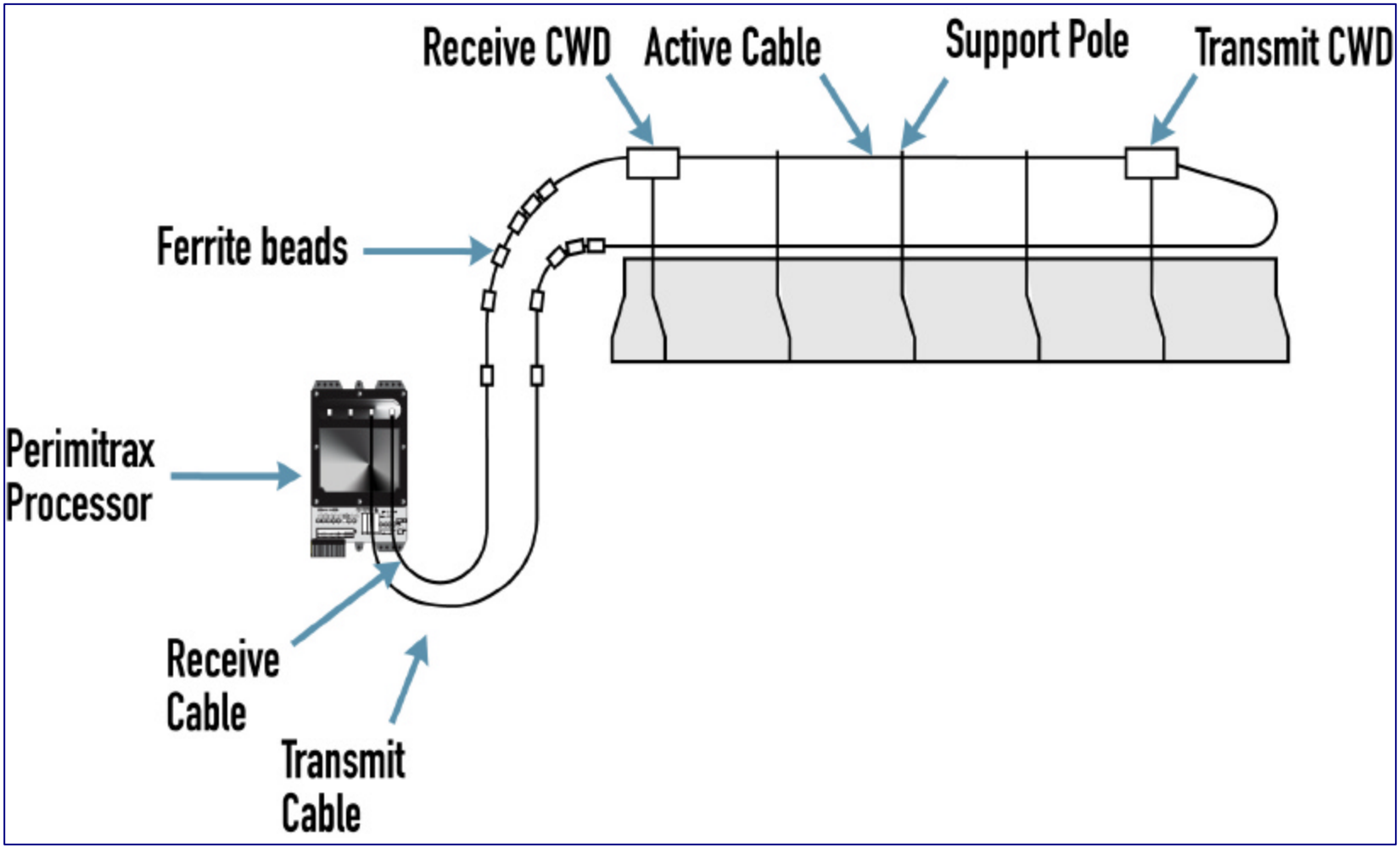
Typical Detection Field on Jersey Barrier

Another Approach to Detection on Jersey Barriers using S-Line

S-Line Principles

- S-Line RF line sensor is based on coupled wave device (CWD) principles
- Guided radar with only a single conductor required, between CWD's at each end of the zone.
- Terrain following, confined field
- Similar sensor technology to Repels ™ portable line sensor
- Bottom "field shaping" conductor also provides signal return to the processor.
- Uses Perimitrax ™ transceiver/processor and for networking

S-Line System Overview



S-Line on Concrete Jersey Barrier

Typical Installation of S-Line on Jersey Barriers during Winter Testing

S-Line on Jersey Barrier at S.I.T.E

S-Line on Concrete Barrier During Winter Testing

S-Line Jersey Barrier CWD Detail

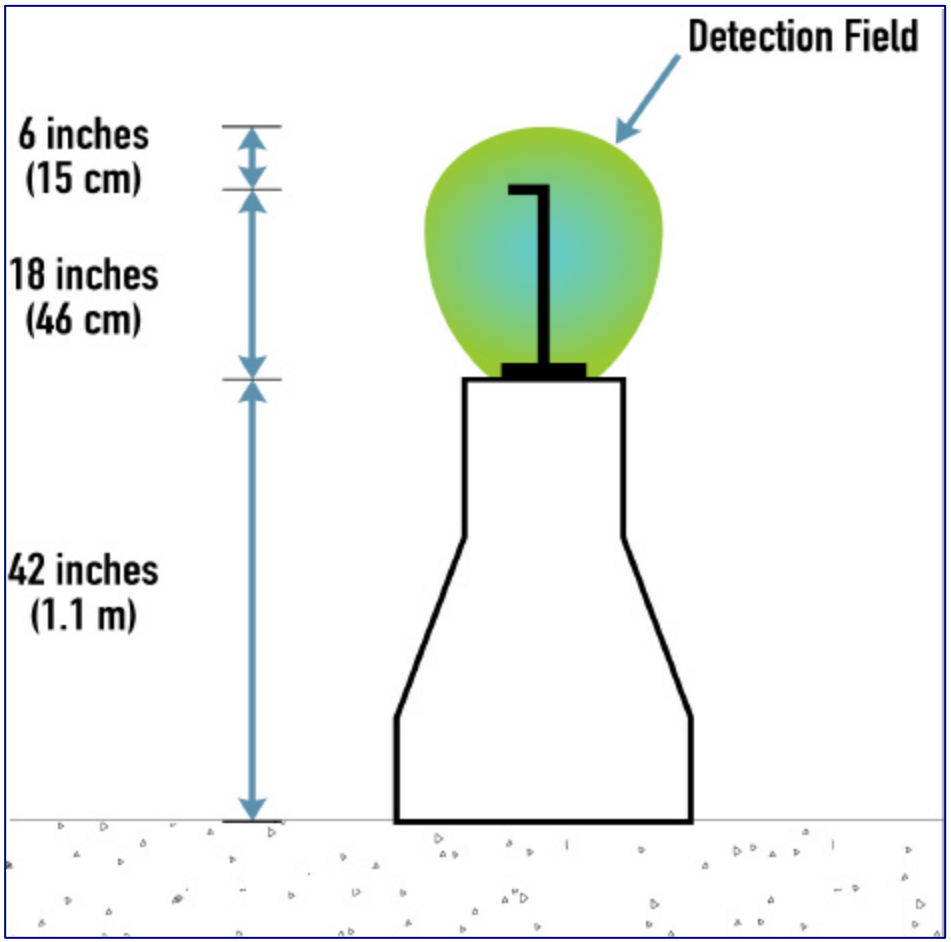
Beginning of Zone at Coupled Wave Device

S-Line Mounting Detail

Typical Mounting of S-Line to Jersey Barrier

S-Line Overview (cont'd.)

- **S-Line Detection Field**



S-Line On Low Block Wall

S-Line Mounted to Existing Cinder Block Wall

S-Line On Low Wall

S-Line On Low Wall

Intrusion Attempt Over Block Wall Application

S-Line Alternative Configurations

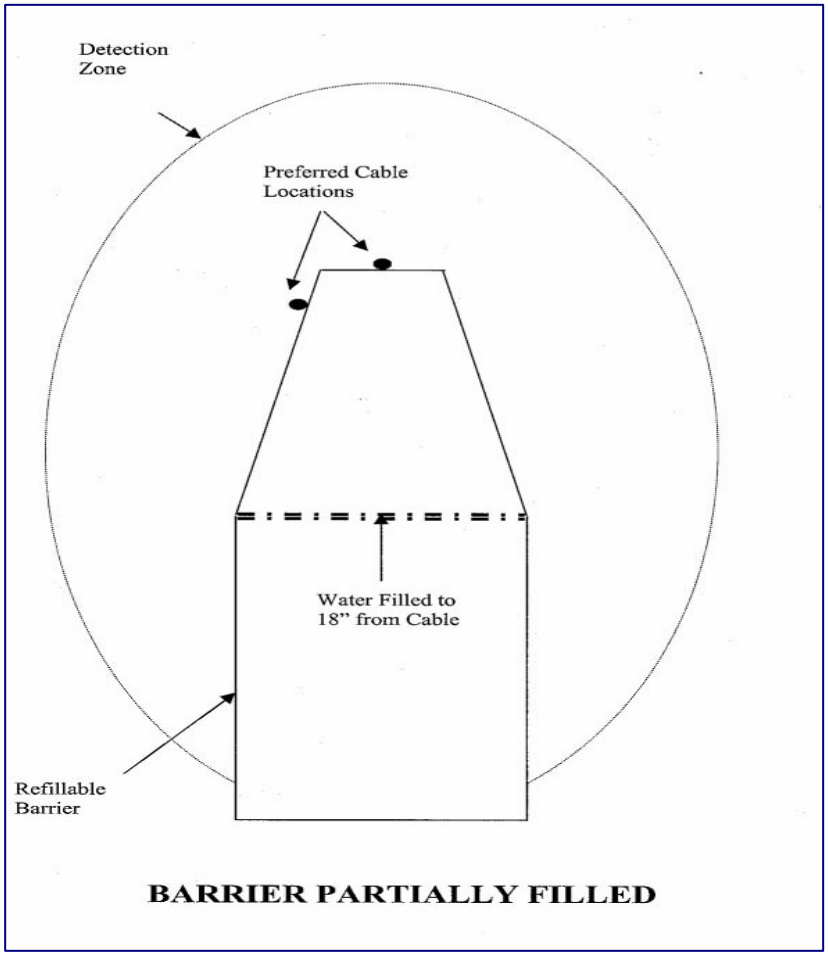
- **S-Line can be installed above concrete or plastic Jersey barriers on standoffs (approx. 16”); can also be oriented to one side.**

- **Can also be installed on partially-filled plastic Jersey barriers, with smaller field**

Integrated Barrier Sensor Test Configurations

Jersey Barrier with S-Line Conductors on the Barrier

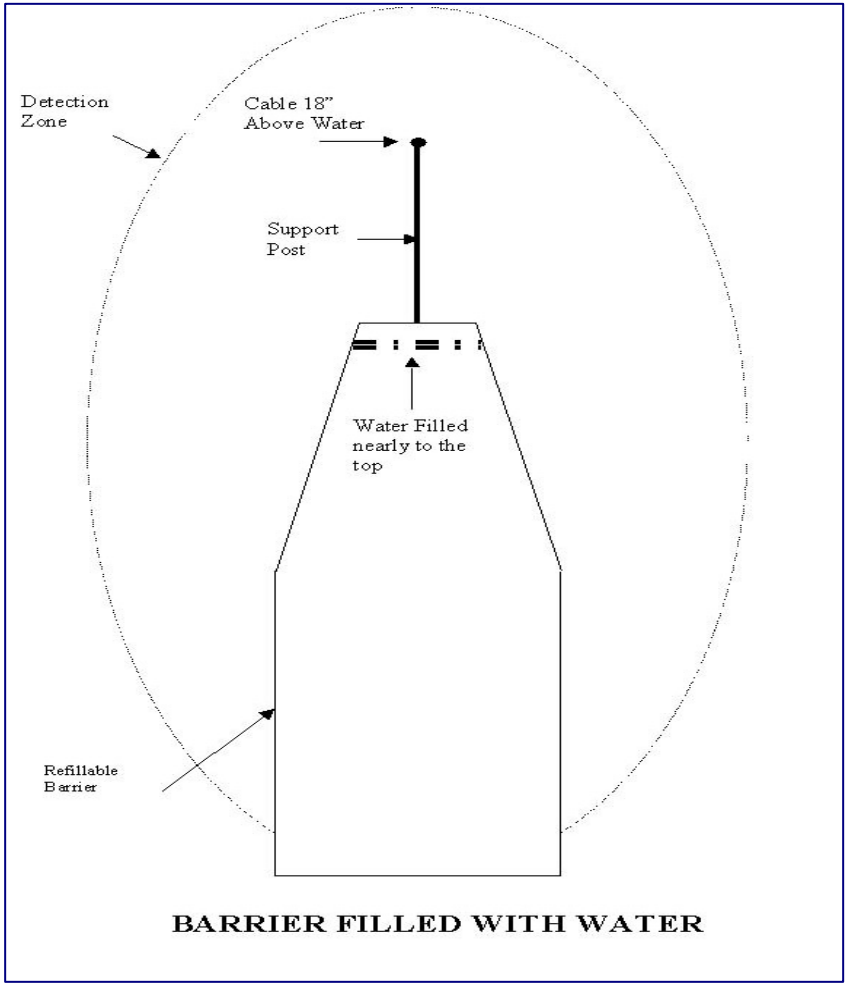
-Partially filled plastic barrier



Integrated Barrier Sensor Test Configurations
(cont'd.)

Jersey Barrier with S-Line

- Water-filled plastic barrier



Site Testing

- **S-Line Testing - ZONE LENGTH OF 80’ (6 segments)**
- **To assess seasonal performance S-Line ran over winter (November 2001-March 2002) with performance of Pd=1 (upright intruders 6” away), extremely low FAR/NAR**
- **Most typical NAR source is heavy winds with driving snow**
- **Transferred to low block wall in April**

Intelli-FIELD Jersey Barrier Testing

- **Intelli-FIELD - ZONE LENGTH OF 92’ (28 meters)**
- **Preliminary results:**
  First installed in April 2002, set up with performance of Pd=1 (upright intruders 6” away), still tuning system;
- **Very Low FAR/NAR**

S-Line Testing

Intrusion Attempt during Winter Testing

Testing at S.I.T.E.

Climb Over Attempt

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S-Line Environment Testing

Test Area During NAR/FAR Testing

Sensor Testing- Plastic Barriers

Climb Over Attempts During Testing

Sensor Alternatives

- **Intelli-FIELD provides flexibility in field height, can match to application**
- **Zone lengths to 150 m., single or dual zones, can integrate multiple zones via StarNeT**

- **S-Line provides smaller field height , zone lengths to 100m., two per SM processor, integrated via Senstar-100 or StarNeT.**
- **RF field sensor so zone overlaps a bit more complex than electrostatic sensor .**

Security Sensors for Re-locatable Jersey Barriers